The Improvement of Rainfall distribution of typhoon in Taiwan using numerical models and satellite data
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Natural disasters in Taiwan have occurred frequently in recent years. Torrential rainfall from typhoons in recent years has broken the precipitation records. The main factor that caused these calamities is intense concentration of rainfall distribution both in spatial and temporal domains. If precaution is performed in advance, it could alert people to take appropriate measurement to reduce disaster losses. Therefore, precisely estimate rainfall triggered by typhoons has become very important. The purpose of this study provides an accurate estimation of precipitation forecast in Taiwan's region impacted by typhoons.

The study utilizes WRF to simulate different paths of typhoons that had struck Taiwan in recent years, the distribution of rainfall in Taiwan. Compared with the actual rainfall data collected by automatic station and revise it. Established typhoon rainfall distribution of each paths in each region in Taiwan. Moreover, discovering the best typhoon rainfall estimation product or algorithms over the ocean by utilizing satellite remote sensing typhoon rainfall (such as Global Precipitation Measurement, GPM) and compared with the rain radar (ex: Precipitation Radar, PR or Dual-frequency Precipitation Radar, DPR) observations respectively.

WRF model is capable of simulating the rainfall ratio distribution of Taiwan when typhoon strikes. Plus, satellites are able to estimate rainfall of typhoons on the sea precisely. In other words, **this study takes advantage of WRF rainfall pattern combined with satellite rainfall estimation by TRaP (Tropical Rainfall Potential) technology.** Simulating the actual distribution of rainfall and the satellites can estimate valid typhoon rainfall to improve typhoon rainfall accuracy estimation in Taiwan.

キーワード: WRF model, Global Precipitation Measurement (GPM), Precipitation Radar, TRaP
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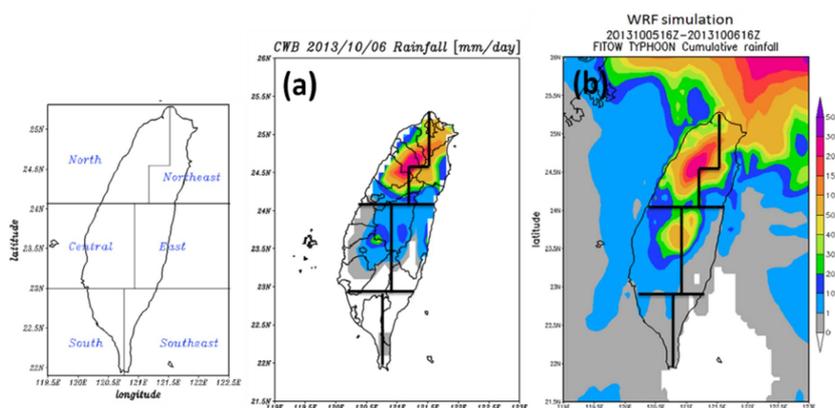
Rainfall distribution of Taiwan area (a) observation, (b) simulation